

WHAT IS CLAIMED IS:

1. A nitride-based semiconductor light-emitting device comprising:

5 a first conductivity type first nitride-based semiconductor layer formed on a substrate;
 an active layer, formed on said first nitride-based semiconductor layer, consisting of a nitride-based semiconductor layer;

10 a second conductivity type second nitride-based semiconductor layer formed on said active layer;

 an undoped contact layer formed on said second nitride-based semiconductor layer; and

15 an electrode formed on said undoped contact layer.

2. The nitride-based semiconductor light-emitting device according to claim 1, wherein

20 the band gap of said undoped contact layer is smaller than the band gap of said second nitride-based semiconductor layer.

3. The nitride-based semiconductor light-emitting device according to claim 1, wherein

25 said second conductivity type second nitride-based semiconductor layer includes a second conductivity type

cladding layer consisting of AlGaIn.

4. The nitride-based semiconductor light-emitting device according to claim 1, wherein

5 said first conductivity type first nitride-based semiconductor layer is an n-type first nitride-based semiconductor layer, and

said second conductivity type second nitride-based semiconductor layer is a p-type second nitride-based semiconductor layer.

5. The nitride-based semiconductor light-emitting device according to claim 1, wherein

15 said undoped contact layer has a thickness of at least about 1 nm and not more than about 10 nm.

6. The nitride-based semiconductor light-emitting device according to claim 1, wherein

20 said undoped contact layer has a band gap larger than the band gap of said active layer.

7. The nitride-based semiconductor light-emitting device according to claim 1, wherein

25 said undoped contact layer contains InGaIn.

8. The nitride-based semiconductor light-emitting device according to claim 1, wherein said undoped contact layer contains GaN.

5 9. The nitride-based semiconductor light-emitting device according to claim 1, wherein said undoped contact layer is constituted of a single undoped nitride-based semiconductor layer.

10 10. The nitride-based semiconductor light-emitting device according to claim 1, wherein said undoped contact layer has a multilayer structure consisting of a plurality of undoped nitride-based semiconductor layers.

15 11. The nitride-based semiconductor light-emitting device according to claim 1, further comprising an undoped third nitride-based semiconductor layer, formed at least between said active layer and said second conductivity
20 type second nitride-based semiconductor layer, consisting of a nitride-based semiconductor having a smaller band gap than said second nitride-based semiconductor layer.

 12. The nitride-based semiconductor light-emitting
25 device according to claim 11, wherein

said undoped third nitride-based semiconductor layer is formed only between said active layer and said second nitride-based semiconductor layer in the interspaces between said active layer and said first and second conductivity type first and second nitride-based semiconductor layers.

13. The nitride-based semiconductor light-emitting device according to claim 11, further comprising a fourth nitride-based semiconductor layer formed between said active layer and said first conductivity type first nitride-based semiconductor layer, wherein

said fourth nitride-based semiconductor layer has a thickness smaller than the thickness of said third nitride-based semiconductor layer.

14. The nitride-based semiconductor light-emitting device according to claim 11, wherein

said second conductivity type second nitride-based semiconductor layer includes a second conductivity type second nitride-based semiconductor layer consisting of AlGaN, and

said undoped third nitride-based semiconductor layer includes an undoped third nitride-based semiconductor layer consisting of GaN.

15. The nitride-based semiconductor light-emitting device according to claim 1, wherein

5 said second conductivity type second nitride-based semiconductor layer includes a second conductivity type cladding layer having a projecting portion,

said undoped contact layer is formed on the upper surface of said projecting portion of said second conductivity type cladding layer, and

10 said projecting portion of said second conductivity type cladding layer and said undoped contact layer constitute a ridge portion.

16. The nitride-based semiconductor light-emitting device according to claim 1, wherein

15 said active layer includes an active layer consisting of a nitride-based semiconductor containing In,

20 said nitride-based semiconductor light-emitting device further comprising a protective layer of a nitride-based semiconductor layer formed on said active layer for preventing In contained in said active layer from desorption.

17. The nitride-based semiconductor light-emitting device according to claim 1, wherein

said first conductivity type first nitride-based semiconductor layer includes a first conductivity type contact layer, and

said first conductivity type contact layer also has a
5 function for serving as a first conductivity type cladding layer.

18. The nitride-based semiconductor light-emitting device according to claim 17, wherein
10 said substrate includes an insulating substrate.

19. The nitride-based semiconductor light-emitting device according to claim 1, wherein
said electrode provided on said undoped contact layer
15 is interdigitally formed.

20. The nitride-based semiconductor light-emitting device according to claim 1, further comprising an undoped fifth nitride-based semiconductor layer formed between
20 said substrate and said first conductivity type first nitride-based semiconductor layer.

21. The nitride-based semiconductor light-emitting device according to claim 20, wherein
25 said undoped fifth nitride-based semiconductor layer

is constituted of a nitride-based semiconductor having a low dislocation density formed by selective lateral growth.

22. The nitride-based semiconductor light-emitting
5 device according to claim 20, further comprising a plurality of mask layers having overhangs formed on said substrate at prescribed intervals, wherein
said undoped fifth nitride-based semiconductor layer
is formed by selective lateral growth to fill up
10 clearances between said mask layers.

23. The nitride-based semiconductor light-emitting
device according to claim 1, wherein
said substrate is a first conductivity type GaN
15 substrate.